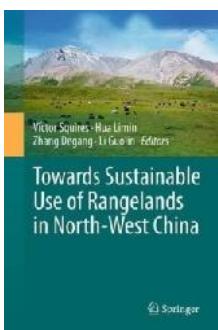


REVIEW: TOWARDS SUSTAINABLE USE OF RANGELANDS
IN NORTH-WEST CHINA

Reviewed by Hilary Howes (Australian National University)



Victor Squires, Hua Limin, Zhang Degang, and Li Guolin (eds). 2010. *Towards Sustainable Use of Rangelands in North-West China*. Dordrecht, Heidelberg, London, New York: Springer Science+Business Media B.V. xxxi + 353. 95 figures, 42 tables, 18 boxes, author index, subject index. ISBN: 978-90-481-9621-0 (hardcover, 184.99EUR), 978-90-481-9622-7 (eBook, 154.69EUR).

Based on the program of an international conference held in Lanzhou, China in 2008, *Towards Sustainable Use of Rangelands in North-West China* offers both an overview of the "extent of resource debasement in China's pastoral zones" and a range of practical solutions for their sustainable use (v). The contributors, a formidable array of academics and policymakers from Australia, Canada, China, the USA, and the Philippines, draw on the substantial body of Chinese-language literature on the topic, thereby helping to "unlock" valuable data previously unavailable to an English-speaking audience.

The rangelands of North-West China are the third largest in the world, covering over three million square kilometers in Inner Mongolia, Tibet, and Xinjiang autonomous regions, and the provinces of Gansu, Qinghai, and Sichuan. Also known as grasslands or pasture lands, they are significant at both the local and global levels. Not only are they vital sources of income for local communities, supporting the world's largest population of sheep and goats and fourth largest population of cattle, they are also recognized as biodiversity "hot spots" and effective carbon sinks. However, as outlined in Chapter One, 'North-West China's Rangelands and Peoples: Facts, Figures, Challenges and Resources', a dramatic increase in livestock numbers since the late 1970s, accompanied by

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intensified use of forage resources, has resulted in severe land degradation, lower productivity, and steep declines in biodiversity and carbon sequestration potential. As the health and integrity of rangeland ecosystems diminishes - marked most visibly by encroaching deserts, denuded pastures, and weed invasion - so too does their ability to deliver crucial services underpinning rural livelihoods, notably water flows, nutrient cycling, biomass production, and buffering against extreme weather events.

The difficulties of undertaking remedial action are exacerbated not only by the geographical remoteness of this vast area, but by its extreme diversity. North-West China's rangelands are inhabited by people of many ethnic groups and cultures, and include several autonomous regions. The highly diverse physical, hydrological, and ecological systems of the rangelands are utilized by different rural communities for a range of activities including traditional livestock herding, intensive irrigated cropping of grains, fruits, and fodder; large-scale dairy production; and the extraction of fossil fuels and mineral ores. These various elements, the authors emphasize, do not operate in isolation, but are interconnected: for example,

[s]eemingly unrelated development programs and new policies aimed at agro-industrialization and livestock intensification in the oasis area exert a major impact on rangelands and on herder livelihoods (8).

As the above quotation suggests, past and present policy settings have often served to accelerate land degradation processes. The privatization of former state farms and assignation of grazing user rights in the late 1970s led to fragmentation and reduced the mobility and flexibility characteristic of traditional systems. In the 1980s, many pastoralists responded (logically enough) to China's rapid transition to a market economy by adjusting their herds to whichever size they believed would "make them the most money" (12). Human population growth is placing further pressure on already stressed ecosystems: the relatively high proportion, in pastoral areas,

of minority nationalities not subject to the One Child Policy has resulted in higher population growth compared to other parts of China. Inevitably, there are also administrative and bureaucratic hurdles, including the Ministry of Agriculture's primary focus on expanding output and revenues, the overlap between its mandate and that of the Ministries of Forestry and Water Resources, and attempts by different bureaus, even within one and the same ministry, to implement conflicting policies. And to top it all off, like a poisoned cherry perched precariously on a crumbling cupcake, there is climate change.

Faced with this bleak picture, a casual reader might well despair. Squires and Hua, however, are careful to nourish a few sparks of hope. China's rangelands "are now seen as containing dynamic and highly resilient ecosystems, especially under traditional management of continuous adjustment to the highly variable rainfall" and in areas subjected to grazing bans, the original flora has reappeared, indicating "that the loss of these species is not irreversible" (12). The remaining chapters, fourteen in all, consider the effectiveness of existing policies designed to address rangeland degradation and discuss a broad range of additional strategies.

Towards Sustainable Use of Rangelands in North-West China is divided into five parts. Part I, 'Rangeland Systems and People under Pressure', comprises two chapters by Squires and Hua. Chapter Two, 'Livestock Husbandry Development and Agro-Pastoral Integration in Gansu and Xinjiang', expands on the introductory survey presented in the first chapter by outlining the two major livestock/ rangeland systems in common use in North-West China - pure grazing, based on seasonal migration from low-lying pastures to alpine and mountain meadows, versus agro-pastoral enterprises, which rely on varying degrees of integration of rangelands and croplands - and assessing efforts to date to address the issue of overgrazing. While past interventions that relied on technical 'solutions' have usually "failed to bring about long term change," "new approaches such as Integrated Ecosystem Management (IEM), whose guiding principle is to allow solutions to *evolve* rather than be imposed from outside" have helped village households find ways to

obtain higher net incomes without over-exploiting rangeland resources (26).

Part II, 'Combating Rangeland Degradation', examines the various options available to arrest and reverse rangeland degradation, focusing in detail on the management of two key elements, livestock and landscapes.

The chapters comprising Part III, 'Achieving the Global Objectives', deal with aspects of biodiversity in North-West China's rangelands, including carbon sequestration and conservation of local livestock breeds.

In Part IV, 'Improving the Profitability and Sustainability of Herding and Farming in the Pastoral Areas of North-West China', the focus shifts to practical measures needed to change the current system. These include trends and innovations in agro-pastoral integration, opportunities to improve animal husbandry practices, the value of better understanding herders' perceptions and expectations through interviews and household surveys, and alternative models of land tenure.

Part V, 'The Way Forward', outlines two innovative approaches. One is centered on environmental education in rural primary and middle schools, the other on redesigning livestock systems in order to simultaneously improve household income and reduce stocking rates. The final chapter summarizes the characteristics and issues judged by the four co-editors to be "most important in the current and future management of environmental resources" in the rangelands of North-West China, outlining key trends over the next two decades and emphasizing the need to ensure that local people have "control and responsibility in the management of their natural resources" (325-326).

This anthology is firmly based on empirical research. Most chapters describe case studies, outlining the methodologies used and discussing the results obtained. For example, Chapter Twelve, 'Land Tenure: Problems, Prospects and Reform', summarizes the results of three contrasting models of tenure tested in Gansu as part of a project jointly funded by the World Bank and Global Environment Facility (GEF), focusing particularly on "a community based management

plan involving 67 households grazing 1,170 ha [hectares] in Gansu" (255). In Chapter Four 'Ecological Control of Rangeland Degradation: Livestock Management', Brant Kirychuk and Bazil Fritz show that the Canadian International Development Agency (CIDA) Sustainable Agriculture Development Program was able to increase herders' awareness of numerous possible efficiencies - grazing rotations, herd health programs leading to higher survival and reproductive rates, effective marketing, record keeping and information sharing - by working with selected "demonstration" farms owned by individuals recognized as leaders in their community. Such farms, they suggest, can generate data for future work, serve as the basis for extension programs, and influence others via the "over the fence effect," where "neighbors observe or hear about successful practices and are more willing to try them on their own" (64). In addition, they note the importance of understanding "the history and why the herders are using the current practices they use" before attempting to implement alternatives, a point also made by other contributors (61).

These observations, I suspect, could well be applicable beyond the rangelands of North-West China. They certainly chime with comments I recorded in 2005-2006 while interviewing individuals involved in salinity management in south-eastern Australia's Goulburn Valley, several of whom remarked on the value of community education, the effectiveness of "peer pressure" (local leadership, familiarity, and trust) in encouraging participation, and the need for technical solutions to also be socially acceptable (Howes 2007:49, 94, 96). In fact, given the Australian Landcare movement's status as "one of the most often cited ... 'community-based' agricultural movements and multi-stakeholder partnership[s] in advanced economies" and the "international attention and substantial interest" it has attracted "as a working example of participatory sustainable development," I was surprised to find no reference to it in any of the fifteen chapters of *Towards Sustainable Use of Rangelands in North-West China* (Wilson 2004:463; Martin and Halpin 1998:449). There is also no real engagement with relevant criticisms of "localist" approaches, such as Jim Woodhill's assertion that the Australian Landcare movement has largely failed to

take into account wider political, economic, institutional, and legal forces "hinder[ing] the resolution of many environmental and development problems solely via the local level" (Woodhill 2010:59).

I was equally surprised to find virtually no mention of the discrimination faced by ethnic minorities in North-West China, notably Uighurs and Tibetans. Squires and Hua briefly mention out-migration as an option to "limit the number of people who rely on grazing for their livelihoods," noting that "its success depends much on alternative employment opportunities and the skills of the affected people" and suggesting increased investment in education "so that the younger generation of the herding families will have the opportunity to start a new career elsewhere" (14). These remarks, though not without merit, fail to take into account recent studies indicating that

Uighurs and Tibetans are staying on the farm, often because discrimination against them makes it difficult to find work in cities ... [e]ven some of the best-educated Uighur and Tibetan migrants struggle to find work (NA 2015; see also Hazmath et al. 2012).

Having said this, overall I found *Towards Sustainable Use of Rangelands in North-West China* to be thoughtful, well structured, informative (effective use is made of maps, tables, and diagrams), and readable. The contributing authors provide an accessible introduction to the challenges facing North-West China's rangelands and document a variety of practical approaches to address these. Recommended for readers with an interest in social and environmental change, mountain ecosystems, and natural resource management.

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